Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

F-1 Hex Furnace
Occidental Chemical Corporation – Geismar Plant
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 3400
Activity Number: PER20030002
Draft Permit 2922-V0

I. APPLICANT

Company:
Occidental Chemical Corporation – Geismar Plant
P.O. Box 227
Geismar, LA 70734-0227

Facility:
F-1 Hex Furnace
8318 Ashland Road
Geismar, Ascension Parish, Louisiana 70734
Approximate UTM coordinates are 693.68 kilometers East and 3341.09 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

Occidental Chemical Corporation (Occidental) owns and operates an industrial organic and inorganic chemicals manufacturing facility (formerly the Vulcan Chemicals – Geismar Plant (Vulcan)) in Geismar, Ascension Parish, Louisiana. On June 7, 2005, Basic Chemicals Company, L.L.C. (Basic), a wholly owned subsidiary of Occidental Chemical Corporation, acquired ownership of the Vulcan facility. On January 1, 2007, the name of the Geismar Plant was changed from Basic Chemicals Company, L.L.C. – Geismar Plant to Occidental Chemical Corporation – Geismar Plant. Occidental currently operates the Geismar Plant under Consolidated Part 70 Air Permit No. 0180-00011-V3 issued to Vulcan on April 19, 2001, Part 70 Air Permit No. 2821-V0 for the Steam Generating Unit issued to Vulcan on December 12, 2002, and Part 70 Air Permit No. 2923-V0 for the Offsites Area issued to Basic on November 20, 2006. The consolidated permit includes permitting requirements for the Caustic/Chlorine Process Units, the F-1 Hex Furnace, and the Chlorinated Organic Units.

This is the Part 70 operating permit renewal for the F-1 Hex Furnace. The F-1 Hex Furnace also operates under Hazardous Waste Permit No. LAD092681824 issued on November 24, 2005.

Consolidated Permit No. 0180-00011-V0 was issued to Vulcan on October 4, 1998. As required by LAC 33:III.507.E.4, Vulcan submitted four timely and complete renewal applications and Emission Inventory Questionnaires (EIQs) on April 4, 2003, six months prior to the expiration of the permit. Four renewal applications were submitted because Vulcan requested a separation of the Consolidated Part 70 Air Permit into four individual unit specific Part 70 air permits, one each for the Caustic/Chlorine Process Units, the F-1 Hex Furnace, the Offsites Area, and the Chlorinated Organic Units.

Basic Chemicals Company, LLC acquired ownership and operation of the Vulcan facility on June 7, 2005. Basic submitted four revised renewal applications and Emission Inventory Questionnaires (EIQs), dated March 31, 2006, to reflect the recent ownership change and to incorporate updates to the renewal applications submitted by Vulcan on April 4, 2003. Each application addresses the renewal of the respective unit's Part 70 permitting requirements. This permit renewal addresses the permitting requirements for the F-1 Hex Furnace.

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit
A permit application and Emission Inventory Questionnaire were submitted by Basic on March 31, 2006 requesting a renewal of the Part 70 operating permit requirements for the F-1 Hex Furnace.

A notice requesting public comment on the proposed permit will be published in *The Advocate*, Baton Rouge, Louisiana, and in the *Gonzales Weekly*, Gonzales, Louisiana. The proposed permit will also be sent to the US EPA Region VI.

In this Part 70 air permit renewal, Occidental proposes to:

- Separate the Consolidated Part 70 Air Permit (Permit No. 0180-00011-V3 issued on April 19, 2001) into four separate Part 70 air permits (Caustic/Chlorine Process Units, F-1 Hex Furnace, Offsites Area, and Chlorinated Organic Units). This permit addresses the permitting requirements for the F-1 Hex Furnace.

- Update emission source calculation methodologies and site-specific source data.

- Propose changes to allow the Vent Collection Drum, D-35, formerly part of the MCF-II Unit which has been decommissioned, to route the EDC Units' MCI Reactor Vent to the F-1 Hex Furnace during outages of the F-2 Oxy Vent Furnace, the primary vent control device.

- Update the facility's General Condition XVII and Insignificant Activities Lists.

- Modify and/or remove some State-Only Specific Conditions contained in the current Title V air permit. State-Only Specific Condition Nos. 1, 2, 4, 8, 10, and 16 of the current Title V air permit were not included in this permit since they are currently contained in and enforced in the Hazardous Waste Permit, Permit No. LAD092681824 issued on November 24, 1995. State-Only Specific Condition No. 9 was modified by removing the following operating conditions which are either contained in the Hazardous Waste Permit or are unjustifiable, and leaving the ones not identical or not listed in the Hazardous Waste Permit: Combined Feed, Total Chlorine Feed, Total Bromine Feed, Stack CO Concentration, Stack O_2 Concentration, T-10 Scrubber Bottoms Temperature, and Hex Reboiler Temperature. State-Only Specific Condition No. 12 was modified by removing items 1 through 6 and 8 (which are contained in the Hazardous Waste Permit) and leaving item 7 (which is not listed in the Hazardous Waste Permit). Specific Condition No. 13 was modified by requiring an analysis of the waste feed to the furnace annually, as per the Hazardous Waste Permit, instead of semi-annually as required in the current Title V air permit; no justification was found for requiring the semi-annual analysis.

- Incorporate emissions into this permit from Compliance Order AE-CN-05-0237 issued to Basic on March 13, 2006. The Compliance Order addressed emissions which were not included in the initial Part 70 operating permit issued to Vulcan on October 5, 1998.

This permit does not include any modifications to the F-1 Hex Furnace, with the exception of using the Vent Collection Drum, D-35, to route the EDC Units' MCI Reactor Vent to the F-1 Hex Furnace during outages of the F-2 Oxy Vent Furnace, the primary vent control device. Because there is no significant increase in emissions associated with the proposed project, a Prevention of Significant Deterioration (PSD) Review and a Non-Attainment New Source Review (NNSR) are not required for this permit.

Process Description

The F-1 Hex Furnace is used to combust liquid and gaseous waste streams. It is also used as a secondary or backup vent control device for the F-2 Oxy Vent Furnace which is permitted in the Chlorinated Organic Units Title V air permit. The liquid waste streams include heavy ends from chlorinated solvent production, contaminated chloro-solvent products, phased organics from the Groundwater Treatment System, and contaminated vent recovery compressor oil. The gaseous vent streams include process vents from the production of chlorinated solvents and chlorine, and vents from product storage and loading.

The streams are routed to the furnace's combustion chamber along with natural gas, air, and steam to complete the combustion process. After leaving the combustion chamber, the combustion products are routed to a waste-heat boiler. From the boiler, the gas is quenched and scrubbed in a series of towers to remove metals (iron), acid gas (HCl), and residual chlorine. After passing through the final scrubber, the vent stream is discharged to the atmosphere.

Permitted Air Emissions

The changes in emissions below are due to the reconciliation of emissions where necessary based on updated emission factors, calculation methodologies, etc., and to the inclusion of emissions from Compliance Order AE-CN-05-0237. Estimated changes in permitted emissions from the F-1 Hex Furnace in tons per year are as follows:

Pollutant	Permitted Before	Permitted After	Permitted Change
PM_{10}	2.50	3.36	+ 0.86
SO_2	< 0.01	0.04	+ 0.04
NO_X	32.01	10.53	- 21.48
CO	0.70	0.31	- 0.39
VOC*	0.93	0.39	- 0.54

* See VOC speciation below

F-1 Hex Furnace
Occidental Chemical Corporation – Geismar Plant
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 3400
Activity Number: PER20030002
Draft Permit 2922-V0

VOC TAP Speciation (TPY) LAC 33:III.Chapter 51 Regulated VOC TAPs			
Pollutant	**Before**	**After**	**Change**
1,1,2,2-Tetrachloroethane	< 0.01	< 0.01	-
1,1,2-Trichloroethane	< 0.01	< 0.01	-
1,2-Dibromoethane	-	< 0.01	< 0.01
1,1-Dichloroethane	< 0.01	< 0.01	-
1,2-Dichloroethane	< 0.01	0.01	+ 0.01
1,2-Dichloropropane	< 0.01	< 0.01	-
1,3-Dichloropropylene	< 0.01	-	< 0.01
Benzene	-	<0.01	< 0.01
Carbon Tetrachloride	< 0.01	< 0.01	-
Chlorobenzene	0.02	-	- 0.02
Chloroethane	< 0.01	< 0.01	-
Chloroform	< 0.01	< 0.01	-
Formaldehyde	-	< 0.01	< 0.01
Hexachloro-1,3-Butadiene	< 0.01	< 0.01	-
Hexachlorobenzene	< 0.01	< 0.01	-
Hexachloroethane	-	< 0.01	< 0.01
Hexane (N-)	-	0.12	+ 0.12
Methanol	-	< 0.01	< 0.01
Methyl Chloride	< 0.01	0.01	+ 0.01
Naphthalene	-	< 0.01	< 0.01
Trichloroethylene	< 0.01	< 0.01	-
Vinyl Chloride	< 0.01	< 0.01	-
Vinylidene Chloride	< 0.01	< 0.01	-
Total VOC TAPs	**0.02**	**0.16**	**+ 0.14**

Other VOCs	**0.23**

Non-VOC TAP Speciation (TPY) LAC 33:III.Chapter 51 Regulated Non-VOC TAPS			
Pollutant	**Before**	**After**	**Change**
1,1,1-Trichloroethane	< 0.01	< 0.01	-
Antimony	< 0.01	< 0.01	-
Arsenic	< 0.01	< 0.01	-
Barium	0.04	< 0.01	- 0.04
Berrylium	0.01	< 0.01	- 0.01

Non-VOC TAP Speciation (TPY) LAC 33:III.Chapter 51 Regulated Non-VOC TAPS			
Pollutant	**Before**	**After**	**Change**
Cadmium	0.01	< 0.01	- 0.01
Chlorine	2.18	2.27	+ 0.09
Chromium	0.02	0.07	+ 0.05
Cobalt Compounds	-	< 0.01	< 0.01
Copper	-	0.09	+ 0.09
Dichloromethane	0.03	< 0.01	- 0.03
Hexachlorocyclopentadiene	-	< 0.01	< 0.01
Hydrochloric Acid	5.24	6.30	+ 1.06
Lead Compounds	0.02	0.13	+ 0.11
Manganese	-	0.20	+ 0.20
Mercury	< 0.01	0.08	+ 0.08
Nickel	-	0.13	+ 0.13
Polychlorinated Biphenyls	-	< 0.01	< 0.01
Selenium	-	< 0.01	< 0.01
Tetrachloroethylene	< 0.01	0.01	+ 0.01
Zinc	-	0.07	+ 0.07
Total Non-VOC TAPs	**7.55**	**9.35**	**+ 1.80**

Regulatory Applicability

This permit was reviewed for compliance with the Louisiana Part 70 operating permit program, the Louisiana Air Quality Regulations, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP). Prevention of Significant Deterioration (PSD) and Non-Attainment New Source Review (NNSR) regulations do not apply.

MACT Requirements

The Occidental - Geismar Plant is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. The owner or operator of any major source that emits or is permitted to emit a Class I or Class II TAP at a rate equal to or greater than the minimum emission rate (MER) listed for that pollutant in LAC 33:III.5112, Table 51.1, shall control emissions of such TAPs to a degree that constitutes Maximum Achievable Control Technology (MACT). The following compounds are either Class I or Class II compounds, and are, facility-wide, emitted above their respective MERs: 1,1,2-trichoroethane, 1,2-dichloroethane, carbon tetrachloride, chlorobenzene, chloroform, dichloromethane, hexachloro-1,3-butadiene, tetrachloroethylene, and vinyl chloride. Sources in the F-1 Hex Furnace emitting these pollutants must comply with MACT requirements. Emissions of chlorine, hydrochloric acid, and sulfuric acid (Class III TAPs), facility-wide, are also above their respective MERs, but MACT is not required for Class III or Supplemental TAPs. Compliance with all applicable provisions of LAC 33:III.Chapter 51 is required.

Air Modeling Analysis

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Air Quality Standard (NAAQS)
N/A			

Impact on air quality from emissions from the F-1 Hex Furnace is below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

IV. PERMIT SHIELD

<N/A>

V. PERIODIC MONITORING

Periodic monitoring is required for certain sources in this permit. All periodic monitoring shall be conducted in accordance with state and federal regulations, as applicable. See the Facility Specific Requirements of the draft Part 70 permit for monitoring requirements.

VI. APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

ID No:	Description	Requirement	Notes
F1-UW	F-1 Unit Wide	40 CFR 61 Subpart FF National Emission Standard for Benzene Waste Operations	**EXEMPT.** The F-1 Unit does not generate benzene containing waste. An initial report as required per 40 CFR 61.357(a) was submitted. There are no additional requirements for this Subpart unless process changes at this unit are made that generate benzene containing waste. [40 CFR 61.340(b)]

F-1 Hex Furnace
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Agency Interest Number: 3400
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Draft Permit 2922-V0

ID No:	Description	Requirement	Notes
100577	F-1 Hex Furnace	LAC 33:III.1503.C Emission Standards for Sulfur Dioxide – Emission Limitations	**EXEMPT.** Units emitting less than 250 tons per year (TPY) of sulfur compounds measured as sulfur dioxide may be exempted from the 2,000 ppm(v) limitation by the administrative authority. [LAC 33:III.1503.C] The F-1 Hex Furnace emits 0.04 TPY of sulfur dioxide.
		LAC 33:III.Chapter 22 Control of Emissions of Nitrogen Oxides (NO_x)	**EXEMPT.** Boilers and industrial furnaces treating hazardous waste and regulated under LAC 33:V.Chapter 30 or 40 CFR part 264, 265, or 266, including halogen acid furnaces and sulfuric acid regeneration furnaces are exempt from the requirements of this rule. [LAC 33:III.2201.C.19
		40 CFR 60 Subpart CCCC Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Construction Is Commenced After November 30, 1999 or for Which Modification or Reconstruction Is Commenced on or After June 1, 2001	**DOES NOT APPLY.** Source does not meet the definition of a commercial and industrial solid waste incinerator (CISWI) as defined in 40 CFR 60.2265. Source is a halogen acid furnace which acts as a chemical recovery unit as defined in 40 CFR 60.2020(n)(6). Source is also regulated by 40 CFR 63 Subpart EEE. [40 CFR 60.2010(c)], [40 CFR 60.2555(g)(2)], [40 CFR 60.2555(n)]
		40 CFR 60 Subpart DDDD Emissions Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999	**DOES NOT APPLY.** Source does not meet the definition of a commercial and industrial solid waste incinerator (CISWI) as defined in 40 CFR 60.2875. Source is a halogen acid furnace which acts as a chemical recovery unit as defined in 40 CFR 60.2555(n)(6). Source is also regulated by 40 CFR 63 Subpart EEE. [40 CFR 60.2500], [40 CFR 60.2555(g)(2)], [40 CFR 60.2555(n)]

ID No:	Description	Requirement	Notes
(continued) 100577	F-1 Hex Furnace	40 CFR 61 Subpart F National Emission Standard for Vinyl Chloride	**EXEMPT.** The F-1 Hex Furnace is a backup control device for the F-2 Oxy Vent Furnace which is the primary control device for vents from the EDC Plant which are subject to 40 CFR 61 Subpart F. However, due to overlap with 40 CFR 63 Subpart G (HON), the owner or operator of any Group 1 process vent subject to this Subpart and to 40 CFR 63 Subpart G shall comply only with the provisions of 40 CFR 63 Subpart G. [40 CFR 63.110(f)(1)]
		40 CFR 63 Subpart G National Emission Standards for Organic Hazardous Air Pollutants (HON) from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) for Process Vents, Storage Vessels, Transfer Operations, and Wastewater	Reduce emissions of total organic hazardous air pollutants by 98 weight percent or to a concentration of 20 parts per million by volume, which is less stringent. [40 CFR 63.113(a)(2)]
			Reduce emissions of hydrogen halides and halogens by 95% or shall reduce the outlet mass of total hydrogen halides and halogens to less than 0.45 kilograms per hour, whichever is less stringent, using a scrubber or other halogen reduction device. [40 CFR 63.113(c)(1)(ii)]
			For Group 1 storage vessels, reduce hazardous air pollutant emissions by operating and maintaining a closed vent system and control device meeting the specifications of 40 CFR 63.119(e). [40 CFR 63.119(a)(1)]
			For each Group 1 transfer rack, reduce emissions of total organic hazardous air pollutants by 98 weight-percent or to an exit concentration of 20 parts per million by volume (ppmv), whichever is less stringent. [40 CFR 63.126(b)(1)]

ID No:	Description	Requirement	Notes
(continued) 100577	F-1 Hex Furnace	40 CFR 63 Subpart EEE NESHAP from Hazardous Waste Combustors	The F-1 Hex Furnace is a halogen acid furnace and shall comply with the requirements of 40 CFR 63.1218 by the compliance date, which is currently October 14, 2008.
		40 CFR 63 Subpart GGGGG NESHAP: Site Remediation	Reduce emissions of total HAPs or TOC (minus methane and ethane) by 95% by weight or limit the concentration of total HAP or TOC (minus methane and ethane) to 20 ppmv or less on a dry basis corrected to 3 percent oxygen. [40 CFR 63.7925(d)]

VII. STREAMLINED REQUIREMENTS

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
N/A			

VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Grandfathered Status - Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Hydrogen Disulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants – Toxic air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential

to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

TAP - Toxic Air Pollutant (LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.